Measurement of the deformation field around a strike slip fault at Parkfield California from 107 monuments using the Rapid Static Surveying method of GPS.

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We have surveyed 107 monuments in a 30x45 km area around Parkfield California in June, 1992 and again in May, 1993. In each survey, we used 6 TurboRogue GPS receivers to accomplish the survey in 5 to 6 days of observation. In both surveys, most monuments were observed twice. Ninety five of the 107 points were occupied for 10 minutes during each observation. The remaining 11 points were occupied for several hours. Rapid Static Survey methods built into the GIPSY-OASIS II analysis software have been used to resolve the phase bias ambiguities for the 10 minute occupations.

The San Andreas Fault in the area of the survey undergoes a transition from creeping in the northwest to locked in the southeast. The high density of geodetic monuments should allow a much higher resolution of the transition than has been available before. The network consists of 3 profiles of about 30 monuments each perpendicular to the fault plus scattered marks-of-opportunity. One profile crosses the fault near the epicenter of the 1966 Parkfield earthquake, one crosses the fault about 10 km to the southeast, and one crosses the fault on Highway 41, about 30 km southeast of the 1966 epicenter.

We are analyzing the data from both sets of observations, and will present he details of the method and the displacements measured from 1992 to 1993.